

NPL SEARCH (FAOM) 04/22/2003  
Prepared in Support of Paper No. 8

**09/849,380**

**INSPEC (INZZ) DATABASE**

**SEARCH HISTORY/RESULTS ATTACHED**

## Search history:

No.	Database	Search term	Info added since	Results	
1	INZZ	(electrophoresis OR fluorescen\$2 OR phosphorescen\$2 OR fluorescen\$2 OR bioluminescen\$2 OR luminesen\$2) AND (beam\$1 OR light OR illuminat\$3 OR energy OR radiation) NEAR guid\$3	1980	121	<a href="#">show titles</a>
2	INZZ	(refract\$4 OR index) NEAR (first OR second OR third) AND (electrophoresis OR fluorescen\$2 OR phosphorescen\$2 OR fluorescen\$2 OR bioluminescen\$2 OR luminesen\$2) AND (beam\$1 OR light OR illuminat\$3 OR energy OR radiation) NEAR guid\$3	1980	0	-
3	INZZ	refract\$4 NEAR index AND (electrophoresis OR fluorescen\$2 OR phosphorescen\$2 OR fluorescen\$2 OR bioluminescen\$2 OR luminesen\$2) AND (beam\$1 OR light OR illuminat\$3 OR energy OR radiation) NEAR guid\$3	1980	6	<a href="#">show titles</a>
4	INZZ	capillary AND (beam\$1 OR light OR illuminat\$3 OR energy OR radiation) NEAR guid\$3	1980	50	<a href="#">show titles</a>

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☐ **document 31 of 50** [Order Document](#)**INSPEC - 1969 to date (INZZ)****Accession number & update**

5185015, A9606-4281P-003, B9603-7230E-053; 960216.

**Title**Optical sensor instrumentation using absorption- and fluorescence-based **capillary** waveguide optrodes.**Author(s)**Weigl-B-H; Draxler-S; Kieslinger-D; Lehmann-H; Trettnak-W; Wolfbeis-O-S; Lippitsch-M-E.**Author affiliation**

Center for Bioeng, Washington Univ, Seattle, WA, USA.

**Source**

Chemical, Biochemical, and Environmental Fiber Sensors VII, Munich, Germany, 19-20 June 1995.

Sponsors: SPIE, Comm. Eur. Communities, Air &amp; Waste Manage. Assoc., Deutsche Forschungsanstalt fur Luft-und Raumfahrt eV, et al.

In: Proceedings-of-the-SPIE-The-International-Society-for-Optical-Engineering (USA), vol.2508, p.199-209, 1995.

**CODEN**

PSISDG.

**ISSN**

ISSN: 0277-786X, CCCC: 0 8194 1866 8/95/ (\$6.00).

**Availability**

SICI: 0277-786X(1995)2508L.199:OSIU; 1-M.

**Publication year**

1995.

**Language**

EN.

**Publication type**

CPP Conference Paper, J Journal Paper.

**Treatment codes**

P Practical; X Experimental.

**Abstract**

An analytical instrument comprising absorption- and fluorescence-based **capillary** waveguide optrodes (CWOs) is described. Glass capillaries with a chemically sensitive coating on the inner surface are used for optical chemical sensing in gaseous and liquid samples. In case of absorption-based CWOs, **light** from an LED is coupled into and out of the **capillary** under a defined angle via a rigid waveguide and an immersion coupler. The coated glass **capillary** forms an inhomogeneous waveguide, in which **light** is **guided** in both the glass and the coating. The portion of the **light** which is absorbed in the

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chemically sensitive coating is proportional to chemical concentration or activity. This principle is demonstrated with a pCO/sub 2/-sensitive inner coating. Typical relative **light** intensity signal changes with this type of optical interrogation are 98%, with an active **capillary** length of 10 mm. For fluorescence-based CWOs, the excitation **light** from an LED is coupled diffusely into the glass **capillary** and the optical sensor layer. A major portion of the excited fluorescence **light** is then collected within the coated **capillary**, and **guided** to the photodiode, which is located on the distal end of the **capillary** waveguide. Hereby, the excitation **light** is separated very efficiently from the fluorescent **light**. As an example, a CWO for pO/sub 2/ is described. Using this optical geometry, it is possible to use the fluorescence decay time of the sensor layer as the transducer signal, even when using solid state components (LEDs and photodiodes). (25 refs).

**Descriptors**

chemical-sensors; fibre-optic-sensors; fluorescence; gas-sensors; light-absorption; light-emitting-diodes; optical-fibre-cladding; optical-fibre-couplers; optical-glass; photodiodes.

**Keywords**

optical sensor instrumentation; absorption based **capillary** waveguide optrodes; fluorescence based **capillary** waveguide optrodes; analytical instrument; chemical concentration; chemically sensitive coating; optical chemical sensing; gaseous samples; liquid samples; absorption based CWOs; LED **light** coupling; rigid waveguide; immersion coupler; coated glass **capillary** inhomogeneous waveguide; CO2 sensitive inner coating; relative **light** intensity signal change; active **capillary** length; diffusely coupled LED excitation; photodiode; fluorescent **light**; O2 sensitive inner coating; fluorescence decay time; 10 mm; CO2; O2.

**Classification codes**

A4281P (Fibre optic sensors; fibre gyros).  
A8280T (Chemical sensors).  
B7230E (Fibre optic sensors).  
B7320T (Chemical variables measurement).  
B7230L (Gas sensors).

**Chemical indexing**

CO2 bin, O2 bin, C bin, O bin; O2 el, O el.

**Numerical indexing**

size: 1.0E-02 m.

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## INSPEC - 1969 to date (INZZ)

## Accession number &amp; update

1344379, A79037017, B79022648; 790000.

## Title

Effect of multimode **capillary light guides** on **light** polarization.

## Author(s)

Bykov-A-M; Volyar-A-V; Kuchikyan-L-M.

## Source

Ukrayins-kyi-Fizychnyi-Zhurnal (Ukrainian SSR), vol.24, no.1, p.132-4, Jan. 1979.

## CODEN

UFIZAW.

## ISSN

ISSN: 0503-1265.

## Publication year

1979.

## Language

RS.

## Publication type

J Journal Paper.

## Treatment codes

X Experimental.

## Abstract

It is shown that a double-layer **light guide** with a liquid core is capable, in certain conditions, of transmitting polarized **radiation** with a polarization not less than 0.98, whilst analogous double-layer glass **guides** depolarize **light**. The dependence of the degree of polarization on the conditions of excitation centring and the angle between the axes of the microobjective and the **light guide**, with excitation by a parallel **beam** of coherent **light**, when oblique **radiation** predominates, was investigated. It was found that bending the **light guide** to a radius of 10 cm does not significantly affect the character of the polarization of the **light** transmitted. (5 refs).

## Descriptors

light-polarisation; optical-waveguides.

## Keywords

multimode **capillary light guides**; **light** polarization; liquid core.

## Classification codes

A4280L (Optical waveguides and couplers).

B4130 (Optical waveguides).

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EAST 1.3.1

- SEARCH HISTORY (I) ATTACHED
- SEARCH RESULTS (II) ATTACHED
  - (1) FRO+KWIC REVIEWED BY EXAMINER
  - (2) ALL SECTIONS REVIEWED BY EXAMINER
  - (C) CITED ON PTO-892 BY EXAMINER
  - (3) CITED ON PTO-1449 BY APPLICANT

	1	2	C	3	Document ID ▾	Title	Current OR
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6542691 B2	Glass capillary array for fluorescence analysis and manufacturing method thereof	385/146
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6519099 B1	Lens system and optoelectric alignment apparatus	359/819
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6475363 B1	Apparatus and method for performing microfluidic manipulations for chemical analysis and synthesis	204/451
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6235175 B1	Microfluidic devices incorporating improved channel geometries	204/453
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6213151 B1	Microfluidic circuit designs for performing fluidic manipulations that reduce the number of pumping sources and fluid reservoirs	137/827
6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6144791 A	Beam steering for optical fibers and other related devices	385/123
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 6017434 A	Apparatus and method for the generation, separation, detection, and recognition of biopolymer fragments	204/612
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5938908 A	Capillary array electrophoresis system	204/603
9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5882369 A	Method for producing a capillary inside a moldable material	65/64
10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5880071 A	Electropipettor and compensation means for electrophoretic bias	204/453
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5833826 A	Method and apparatus for reducing the distortion of a sample zone eluting from a capillary electrophoresis capillary	204/452
12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5796892 A	Delivery of radiation from a first transparent medium to a second transparent medium having a lower refraction index	385/38
13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5757014 A	Optical detection device for analytical measurement of chemical substances	250/458.1
14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5582705 A	Multiplexed capillary electrophoresis system	204/603
15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5529679 A	DNA detector and DNA detection method	204/603
16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5439578 A	Multiple capillary biochemical analyzer	204/603
17	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5141609 A	Method and device employing time-delayed integration for detecting sample components after separation	204/452
18	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	US 5073239 A	Fluid introduction into a capillary by electroendosmosis	204/453
19	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5001737 A	Focusing and guiding X-rays with tapered capillaries	378/147
20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 4960316 A	Capillary splice	385/95
21	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 4159863 A	Coupling of optical glass fibres	385/33
22	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20030068134 A1	Tuning the index of a waveguide structure	385/50
23	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20030067599 A1	Detection cell	356/246
24	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20020162746 A1	Energy beam guide for an electrophoresis system	204/452
25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20020102091 A1	Glass capillary array for fluorescence analysis and manufacturing method thereof	385/146
26	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EP 679881 A	Optical detector for liquid chromatography, capillary electrophoresis - uses analyte and reference fluid channels which are etched into cover and substrate with light path constructed as Bragg waveguide extending through analyte fluid channel	

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	1	2	C	3	Document ID ▽	Title	Current OR
27	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EP 1106988 A2	Flow cell with an inner layer of an amorphous fluoropolymer having a refractive index less than the refractive index of water	
28	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	DE 19616824 A	Micro-column analytic system with optical fibre for sample of fluid for liquid chromatography - has non-rigid coupling of detector-terminated fibre to outlet from capillary where light of selected wavelength interacts with flowing sample	

ADDITIONAL QUERIES (RESULTS INCLUDED ON "II")

	Hits	Search Text	DBs	L #
1	538	(385/124).CCLS.	USPAT; US-PGPUB	L1
2	247	(385/146).CCLS.	USPAT; US-PGPUB	L2
3	1	1 and electrophoresis	USPAT; US-PGPUB	L3
4	2	2 and electrophoresis	USPAT; US-PGPUB	L4
5	20	1 and (first near2 (refract\$3 index material)) same (second near2 (refract\$3 index material)) same (third near2 (refract\$3 index material))	USPAT; US-PGPUB	L5
6	3	2 and (first near2 (refract\$3 index material)) same (second near2 (refract\$3 index material)) same (third near2 (refract\$3 index material))	USPAT; US-PGPUB	L6
7	5	2 and capillary	USPAT; US-PGPUB	L7
8	22	1 and capillary	USPAT; US-PGPUB	L8
9	5	("3492058"   "3910677"   "3932184"   "4049413"   "4067937").PN.	USPAT	L33
10	5	4159863.URPN.	USPAT	L36

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	1	2	C	3	Document ID ▽	Title	Current OR
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 6542691 B2	Glass capillary array for fluorescence analysis and manufacturing method thereof	385/146
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12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 5796892 A	Delivery of radiation from a first transparent medium to a second transparent medium having a lower refraction index	385/38
13	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 5757014 A	Optical detection device for analytical measurement of chemical substances	250/458.1
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25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	US 20020102091 A1	Glass capillary array for fluorescence analysis and manufacturing method thereof	385/146

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